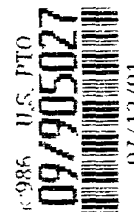




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**(54) Title:** MONOLITHIC FABRICATION OF FLUIDIC STRUCTURES**(57) Abstract**

A new technique for fabricating two-dimensional and three-dimensional fluid microchannels for molecular studies includes fabricating a monolithic unit using planar processing techniques adapted from semiconductor electronics fabrication. A fluid gap between a floor layer (12) and a ceiling layer (20) is provided by an intermediate patterned sacrificial layer (14) which is removed by a wet chemical etch. The process may be used to produce a structure such as a filter or artificial gel by using Electron beam lithography to define a square array of 100 nm holes (30) in the sacrificial layer. CVD silicon nitride (54) is applied over the sacrificial layer and enters the array of holes to produce closely spaced pillars. The sacrificial layer can be removed with a wet chemical etch through access holes in the ceiling layer, after which the access holes are sealed with VLTO silicon dioxide (64).

